

WHAT IS CLAIMED IS:

1. A method for obtaining an irradiation intensity of a laser beam comprising the steps of:

inputting an intensity of fluorescence emitted from a fluorescent glass, the fluorescence intensity being obtained when the laser beam is irradiated onto the fluorescent glass which emits the fluorescence by irradiation of the laser beam with an ablation area of a size required for processing an object to be processed; and

obtaining an irradiation intensity distribution of the laser beam in the ablation area based on the inputted fluorescence intensity.

2. The irradiation intensity obtaining method according to claim 1, wherein:

the object to be processed is a cornea, and

the fluorescent glass has a shape of a convex-curved surface approximate to a corneal shape of a human eye.

3. The irradiation intensity obtaining method according to claim 1, further comprising the step of calibrating ablation data for ablating the object to be processed into a predetermined shape by the irradiation of the laser beam based on the obtained irradiation intensity distribution.

4. The irradiation intensity obtaining method according to claim 1, further comprising the step of calibrating control data for a laser beam irradiation

apparatus based on the obtained irradiation intensity distribution.

5. An apparatus for obtaining an irradiation intensity of a laser beam comprising:

input means for inputting an intensity of fluorescence emitted from a fluorescent glass, the fluorescence intensity being obtained when the laser beam is irradiated onto the fluorescent glass which emits the fluorescence by irradiation of the laser beam with an ablation area of a size required for processing an object to be processed; and

obtaining means for obtaining an irradiation intensity distribution of the laser beam in the ablation area based on the inputted fluorescence intensity.

6. The apparatus for obtaining an irradiation intensity of a laser beam according to claim 5, wherein:

the object to be processed is a cornea, and

the fluorescent glass has a shape of a convex-curved surface approximate to a corneal shape of a human eye.

7. The apparatus for obtaining an irradiation intensity of a laser beam according to claim 5, further comprising calibrating means for calibrating ablation data for ablating the object to be processed into a predetermined shape by the irradiation of the laser beam based on the obtained irradiation intensity distribution.

8. The apparatus for obtaining an irradiation

intensity of a laser beam according to claim 5, further comprising calibrating means for calibrating control data for a laser beam irradiation apparatus based on the obtained irradiation intensity distribution.

9. An apparatus for irradiating a laser beam comprising:

irradiation means having a laser source and an irradiation optical system for irradiating a laser beam onto an object to be processed;

input means for inputting ablation data for ablating the object to be processed into a predetermined shape by irradiation of the laser beam;

control means for obtaining control data for the irradiation means based on the inputted ablation data;

a fluorescence detecting optical system having an area sensor, for obtaining an intensity of fluorescence emitted from a fluorescent glass, the fluorescence intensity being obtained when the laser beam is irradiated onto the fluorescent glass which emits the fluorescence by irradiation of the laser beam with an ablation area of a size required for processing the object to be processed;

obtaining means for obtaining an irradiation intensity distribution of the laser beam in the ablation area based on the obtained fluorescence intensity; and

calibrating means for calibrating at least one of the ablation data and the control data for the irradiation

means based on the obtained irradiation intensity distribution.

10. The apparatus for irradiating a laser beam according to claim 9, the apparatus being a laser beam irradiation apparatus for corneal surgery which ablates a cornea being the object to be processed by the irradiation of the laser beam, wherein the fluorescent glass has a shape of a convex-curved surface approximate to a corneal shape of a human eye.

11. The apparatus for irradiating a laser beam according to claim 9, wherein:

the irradiation optical system includes beam moving means for moving a cross sectional area of the laser beam in the ablation area, and

the obtaining means obtains the irradiation intensity distribution in the ablation area by summing the fluorescence intensity obtained at the time of moving the beam cross sectional area.

12. The apparatus for irradiating a laser beam according to claim 11, wherein the calibration means calibrates at least one of control data for the laser source and control data for the beam moving means based on the obtained irradiation intensity distribution.

13. The apparatus for irradiating a laser beam according to claim 11, wherein the beam moving means includes a scanning optical system for scanning the beam cross sectional area in a small spot or in a rectangular

shape.

14. The apparatus for irradiating a laser beam according to claim 9, wherein:

the irradiation optical system includes an aperture having an opening for limiting the ablation area; and the calibration means calibrates control data for the aperture based on the obtained irradiation intensity distribution.